MARIE

December 2002 Status – Science Data Comments

The MARIE instrument is continuing to perform as expected and providing science data as anticipated.

During December 2002, the MARIE instrument provided radiation data from 1st through the 31st with intermittent breaks during 2nd to 4th, 9th to 13th, and 21st to 23rd. All of these were due to the usual data down load and erase sequence. In the month of December, the MARIE instrument collected data for a total of ~ 19 days.

Radiation dose-rate measurements from MARIE data during the period from December 1st through 31st indicate that the background GCR dose-rate was 21 ± 2 mrad/day, within 10% of model calculations. The data from the month of December consists of mostly of the *quiet-time* GCR. There is no indication of SPE enhanced dose-rate during the month of December. During December, the average Earth-Sun-Mars angle was about 110°.

MARIE Events to Remember: The month of **June** was reported to be the first month without any SPE enhanced dose rate. The month of **July** showed the highest SPE enhanced dose-rate for the first time at Mars orbit during the current solar cycle since March-2002. At its peak, the dose-rate was observed to exceed 1000 mrad/day. In the month of **August**, the instrument was kept in *standby* mode for 20 days for the first time during the mapping phase since March 2002. In the month of **October**, MARIE observed two prominent SPE enhanced dose-rate events. This is a first observation for the MARIE instrument to obtain SPE enhanced dose-rates from two different strong events (~ 500 mrad/day around October 15th and > 1000 mrad/day around October 28th) in one month. These events were originated from the *farside* of the Sun (on the solar disk that is facing away from the Earth) and were not seen by near-Earth monitors such as GOES-8. In the month of **December**, for a short time, MARIE observed a lower *quiet time* GCR dose rate than of any earlier months. Incidentally, this low was anticipated from the model predictions.

Further analysis of the science data is in progress.

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